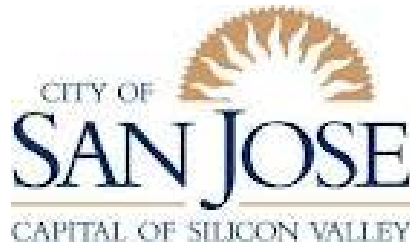


San Jose's "Smart" LED Streetlights: Controlled



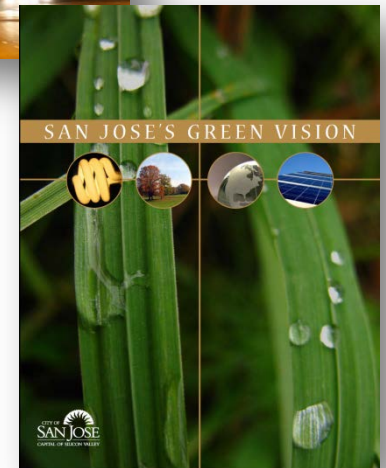
Amy Olay, P.E.

Senior Civil Engineer

amy.olay@sanjoseca.gov

CSJ Streetlight Program - Background

- 62,000 streetlights
- O&M cost: \$6M annually
- 2007: Green Vision
 - Reduce energy consumption
 - Use 100% renewable energy
- 2008: Revised Streetlight Policy
- Optimize Energy Savings
 - Remote/Programmable Dimming



LED for Roadway Lighting



- Energy efficient
- Long lasting
- Directional
- Uniformity
- Quality Color Rendition
- No hazardous waste
- Dimmable

Pilot Projects



City dispatch frequency test
2008



Residential/Powerline test
2009



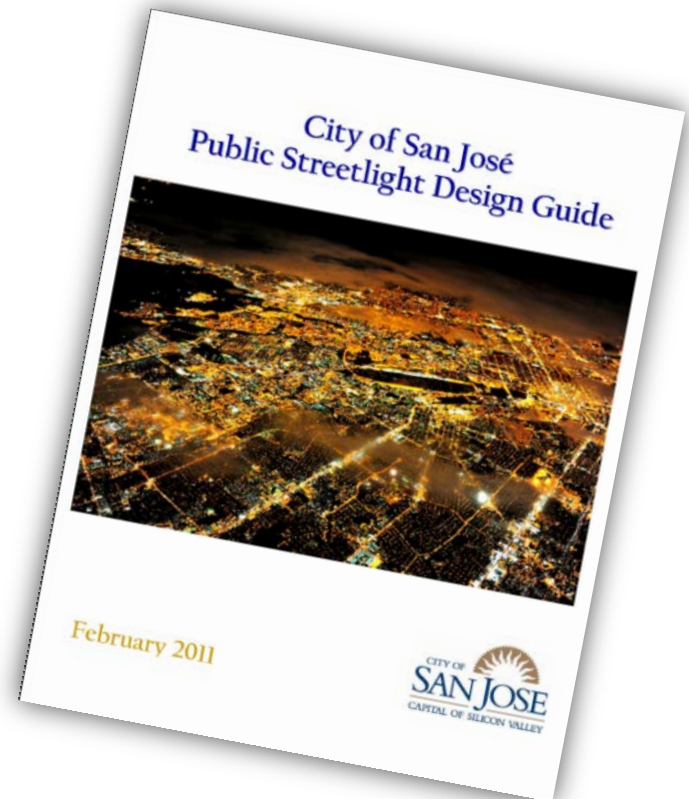
Industrial/Wireless test
2009



Demo of various lights sources
2010

Public Streetlight Design Guide

- Adopted February 2011
- Streetlight Replacement Guide
- Streetlight Installation Guide
- Adaptive Lighting Design Guide



Comparison Metrics

	Old Standard (LPS)	New Standard (LED)
Color Recognition & Visibility	Poor - Fair	Excellent
Public Response	Negative	Positive
Energy Cost /Year	\$4 million	\$2.4 million - \$1.6 million
Replacement Cycle	3 years	10+ years
Payback		10+ years (currently)
Hazardous Waste	Yes	No
Programmable	No	Yes

LED and “Smart” Controls

- Goal: Increase Energy Savings
- Strategy: “Smart” Control System
 - Remote/Programmable Dimming
 - Lighting based on activity level
 - Reduce energy use
 - Minimize light pollution
 - Consumption Data thru Metering
 - Pay for actual energy consumed

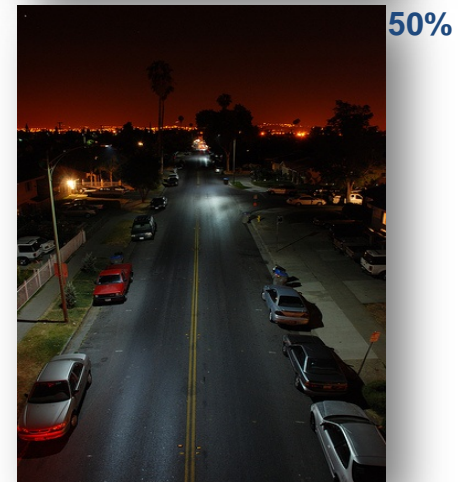
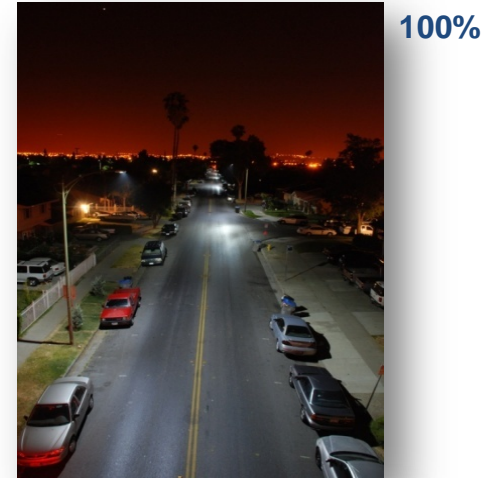


Photo Source: PG&E Emerging Technology/Energy Solutions

Current Projects

Policy Direction

Pilots

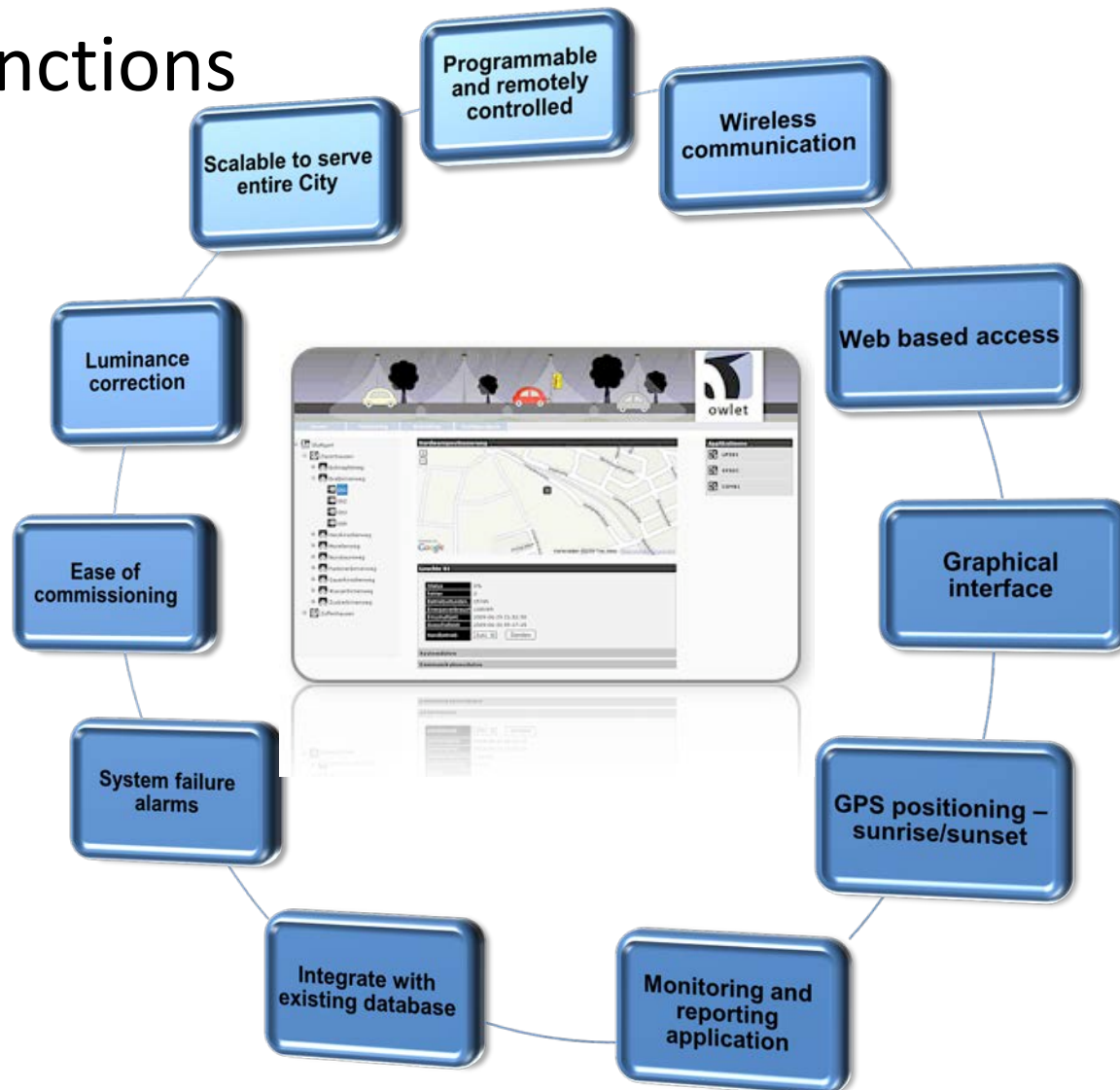
Design Guidelines

RFP

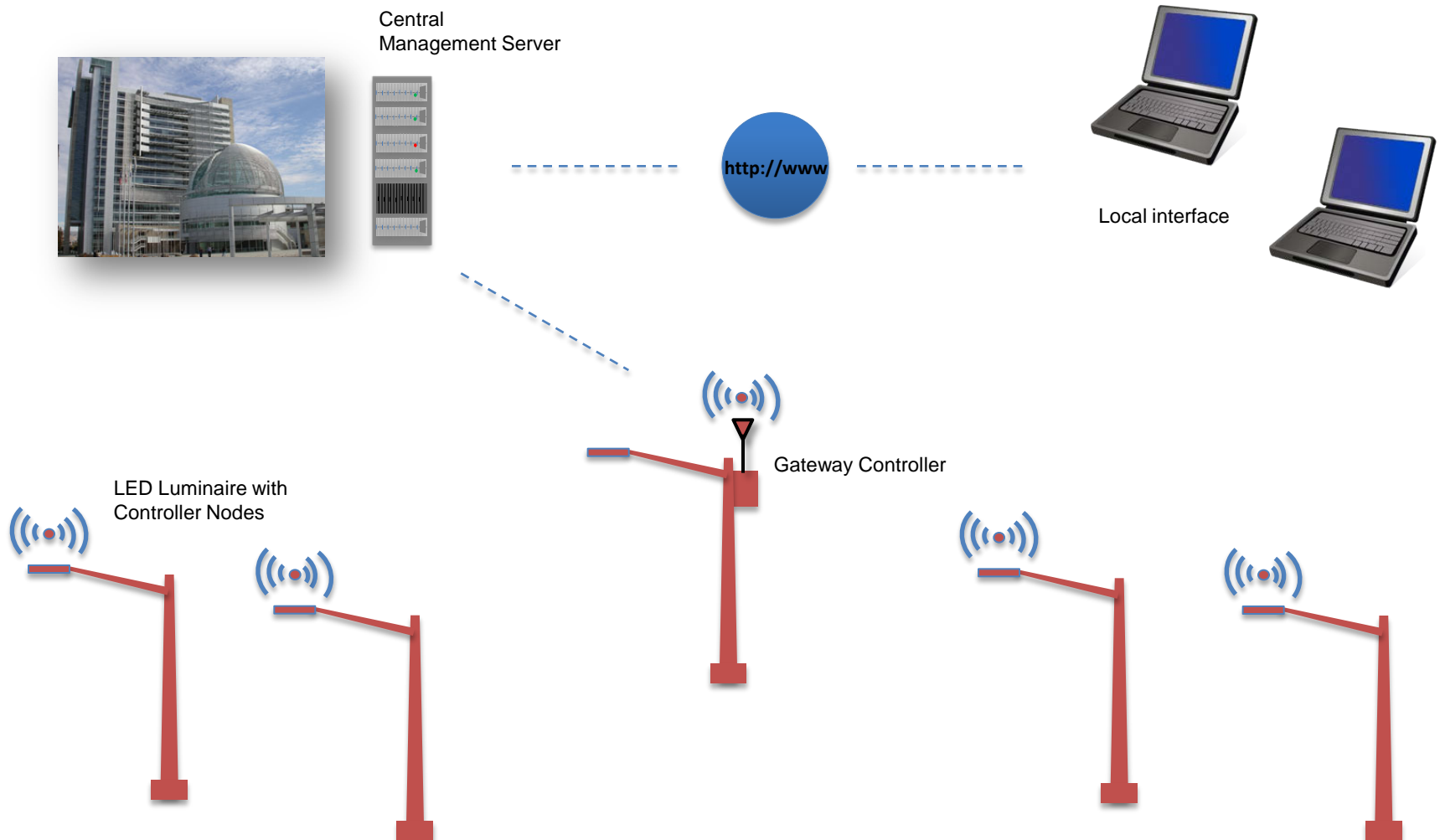
Convert to
2,000+
“smart” LED
lights by end
of 2012



System Functions



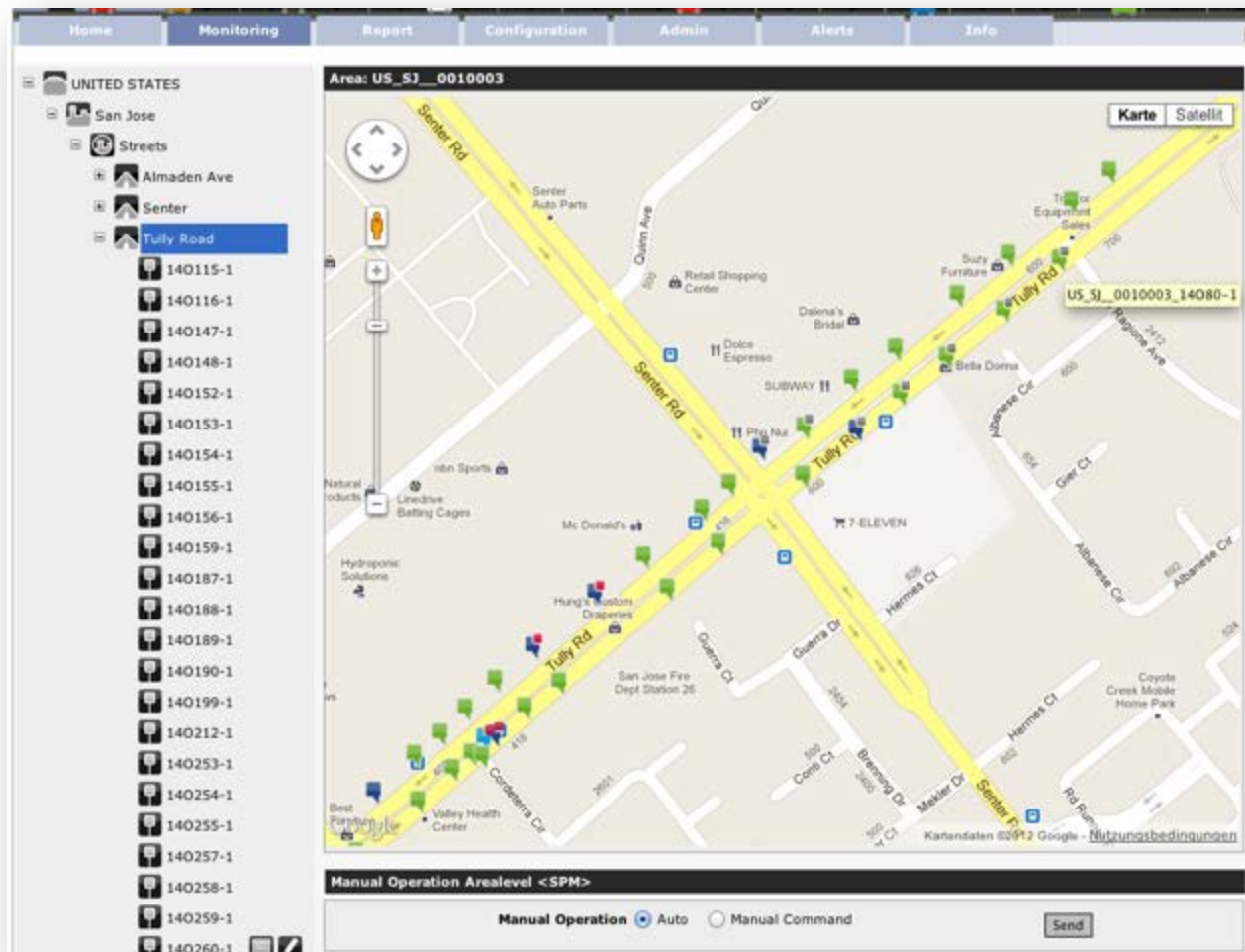
“Smart” Control System Architecture



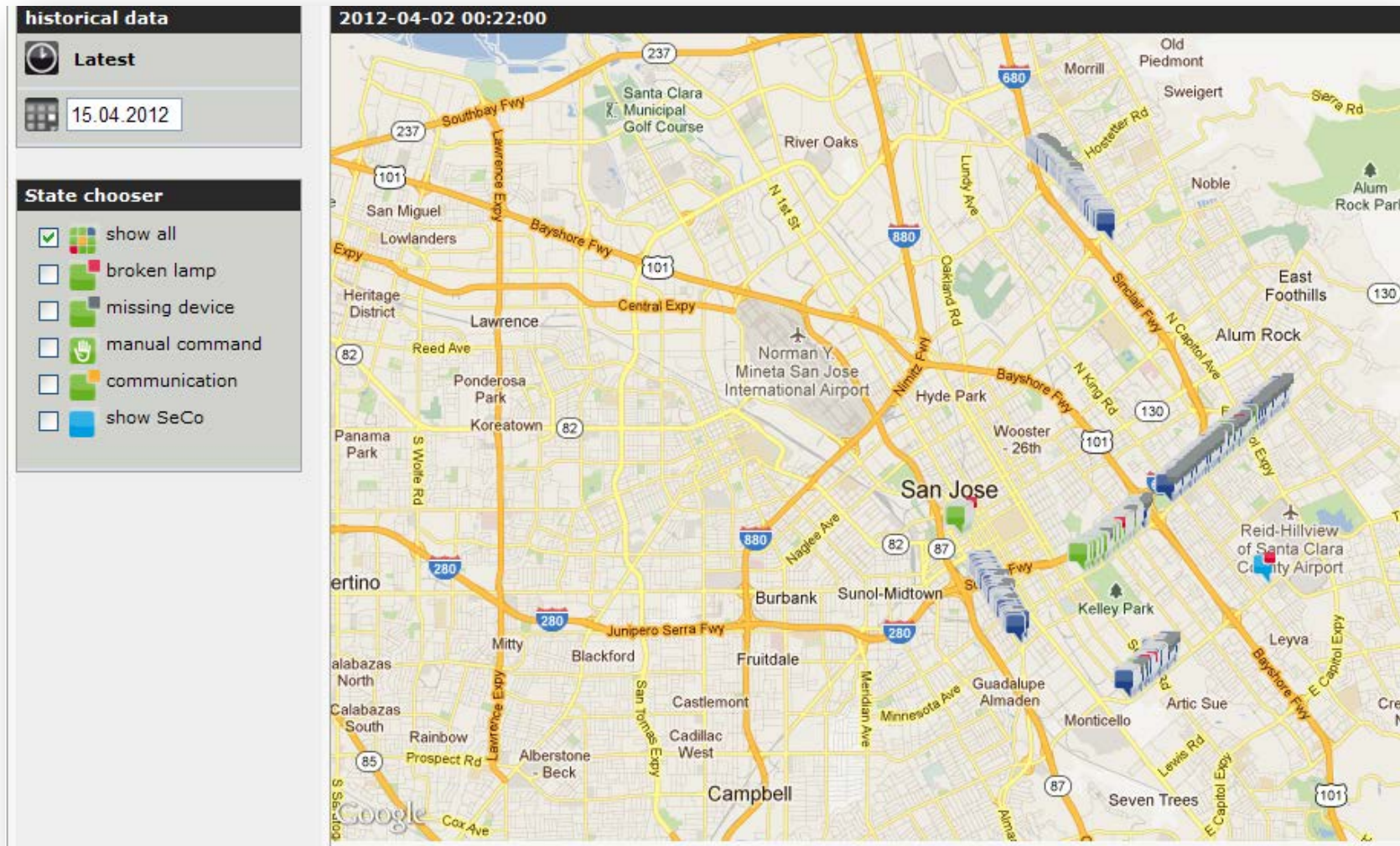
Interface - Reports

The screenshot displays the 'Reports' section of the Municipal Solid-State Street Lighting Consortium interface. The top navigation bar includes links for Home, Monitoring, Report, Configuration, Admin, Alerts, and Info. The left sidebar shows a hierarchical tree structure for the United States, with San Jose selected, and a list of streets including Almaden Ave, Senter, and Tully Road. The main content area features a map of the device location at the intersection of Tully Rd and La Ragona Ave. Below the map, the device information is displayed: 'Device: US_SJ_0010003_14080-1 TULLY RD 30 WO LA RAGIONE AVE / Lumec / C / 240 V'. The status report for the device includes the following sections:

- Dimmable Ballast Metered <EBD01>**
- Controller General <SYS02>**
 - Status Information**
 - Failure Message (FFM): None
 - Device Uptime (FRH): 103 h
 - Temperature (TMP): 35.7 °C
 - Communication Quality (FRS): 90
 - Astro Clock**
 - System Time (FTS): 05.02.2012 23:31:44
 - Sun Position Azimuth (FAA): 21 °
 - Sun Position Elevation (FAE): -68 °
 - Software Reset (RCC):** [Reset]
- Controller Version <SYS04>**
- Communication <COM01>**

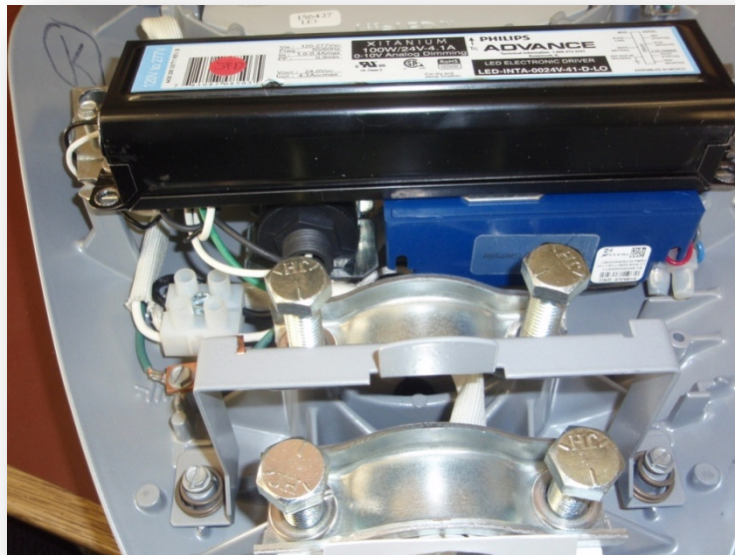


Interface - Reports



Municipal Solid-State
STREET LIGHTING
CONSORTIUM

Sponsored by the U.S. Department of Energy

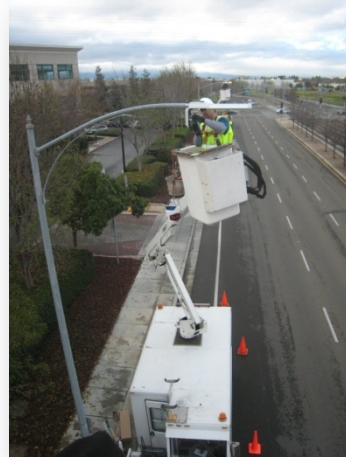


Municipal Solid-State
STREET LIGHTING
CONSORTIUM

Sponsored by the U.S. Department of Energy



Commissioning



"SMART" LED Streetlight Monitoring and Control System
Senter Road 2-1-12
Model #C: GPLM-130W98LED4K-LE3-VOLT-DMG-**-PH9-USA-NP

2/2/2012
1 of 1

SeCo 1-26	SeCo Router Address	Badge #	[16-Digit ZigBee Label]	Google GPS Coord.		Street	Luminaire Mfg	Model #	Voltage	Pole Type	Type Removed	Wiring	Comments
				Latitude	Longitude								
		140149	1027JL6 (01) 10-3104-2340-31-10-1130 2340-31-10-1130 FW:2.41.10.16	-121.84865588500	37.30869595670	Senter Rd	Lumec	C	240	<input type="checkbox"/> TS <input type="checkbox"/> Oct/Galv <input type="checkbox"/> Oct Painted <input type="checkbox"/> Type 15 <input type="checkbox"/> Wood	<input type="checkbox"/> LPS <input type="checkbox"/> HPS <input type="checkbox"/> Other	<input type="checkbox"/> O.H. <input type="checkbox"/> U.G.	
		140160	1027JL6 (01) 10-3104-2340-31-10-1130 2340-31-10-1130 FW:2.41.10.16	-121.84756807400	37.30767711860	Senter Rd	Lumec	C	240	<input type="checkbox"/> TS <input type="checkbox"/> Oct/Galv <input type="checkbox"/> Oct Painted <input type="checkbox"/> Type 15 <input type="checkbox"/> Wood	<input type="checkbox"/> LPS <input type="checkbox"/> HPS <input type="checkbox"/> Other	<input type="checkbox"/> O.H. <input type="checkbox"/> U.G.	
		140211	1027JL6 (01) 10-3104-2340-31-10-1130 2340-31-10-1130 FW:2.41.10.16	-121.84730110300	37.30788345210	Senter Rd	Lumec	C	240	<input type="checkbox"/> TS <input type="checkbox"/> Oct/Galv <input type="checkbox"/> Oct Painted <input type="checkbox"/> Type 15 <input type="checkbox"/> Wood	<input type="checkbox"/> LPS <input type="checkbox"/> HPS <input type="checkbox"/> Other	<input type="checkbox"/> O.H. <input type="checkbox"/> U.G.	
		14093	1027JL6 (01) 10-3104-2340-31-10-1130 2340-31-10-1130 FW:2.41.10.16	-121.84862813900	37.30910201370	Senter Rd	Lumec	C	240	<input type="checkbox"/> TS <input type="checkbox"/> Oct/Galv <input type="checkbox"/> Oct Painted <input type="checkbox"/> Type 15 <input type="checkbox"/> Wood	<input type="checkbox"/> LPS <input type="checkbox"/> HPS <input type="checkbox"/> Other	<input type="checkbox"/> O.H. <input type="checkbox"/> U.G.	
		14060	1027JL6 (01) 10-3104-2340-31-10-1130 2340-31-10-1130 FW:2.41.10.16	-121.84823209100	37.30829397640	Senter Rd	Lumec	C	240	<input type="checkbox"/> TS <input type="checkbox"/> Oct/Galv <input type="checkbox"/> Oct Painted <input type="checkbox"/> Type 15 <input type="checkbox"/> Wood	<input type="checkbox"/> LPS <input type="checkbox"/> HPS <input type="checkbox"/> Other	<input type="checkbox"/> O.H. <input type="checkbox"/> U.G.	

Working Together with Local Utility

- LED Streetlights
 - Rebate incentive program
- “Smart” Controls
 - Metering Accuracy
 - Data format
 - Reports (example data)
 - Streetlight inventory
 - Installation dates
 - Read times
 - Energy consumption



Now and Future...

- PG&E Pilot Program: Network Controlled Dimmable Streetlights
- Agencies: Desirables
 - “Controls-ready” lights
 - One package (luminaires with controls)
 - System with minimal on-going fees
 - Maximize use of existing communication infrastructure
 - Compatibility / Interoperability

San Jose's "Smart" LED Streetlights: Controlled



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